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Comments**Re: Serial No. 09/877,774**

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1. **(Currently Amended)** A heat exchanger that utilizes a working fluid for transferring heat to or from a body, comprising:
- a) a core having a length-first dimension extending in a first direction, a width-second dimension extending in a second direction perpendicular to said length-first direction, and a heat transfer surface-interface extending along each of said length-first direction and said width-direction, said heat transfer interface for transferring heat between said core and the body and being external to said core;
 - b) a plurality of first manifolds, for containing the working fluid, formed in said core and spaced from said heat transfer interface and, each first manifold of said plurality of first manifolds having a primary flow axis extending along said length in said first direction;
 - c) a plurality of second manifolds, for containing the working fluid, formed in said core and spaced from said heat transfer interface, each second manifold of said plurality of second manifolds having a primary flow axis extending in said first direction; and extending substantially co-extensively, and said plurality of second manifolds located alternately across said width, with said plurality of first manifolds along said second direction; and
 - d) a plurality of interconnecting channels, for containing the working fluid, formed in said core and spaced from one another along said length in said first direction, each interconnecting channel of said plurality of interconnecting channels having a first end fluidly communicating with at least one first manifold of said plurality of first manifolds at a location distal from said heat transfer surface, and a second end fluidly communicating with at least one of said plurality of second manifolds, said plurality of interconnecting channels configured so that substantially all of the heat transferred between said core and the body is transferred to the working fluid as the working fluid flows in a direction substantially perpendicular to said heat transfer interface.

41. **(Currently Amended)** A heat exchanger configured to transfer heat between a body and a fluid having a flow, comprising:

- a) an impervious first heat transfer layer comprising region, a highly heat-conductive material and defining a heat transfer interface adapted for thermally interfacing with the body;

- b) a manifold region substantially coextensive with said ~~impervious~~ heat transfer layer interface and spaced from said ~~impervious~~ first heat transfer layer region opposite said heat transfer interface, said manifold region ~~comprising~~ containing a plurality of first inlet manifolds and a plurality of second outlet manifolds located ~~alternately~~ interdigitated with said plurality of first inlet manifolds, ~~said first and second plurality of manifolds for containing the fluid;~~
- c) a ~~permeable second~~ heat transfer ~~matrix comprising region~~ extending between said first heat transfer region and said manifold region, said second heat transfer region a ~~highly~~ heat conductive material, being ~~substantially coextensive~~, and in thermal communication with said ~~impervious first~~ heat transfer layer region ~~and extending between said manifold region and said impervious heat transfer layer;~~ and
- d) a plurality of interconnecting channels ~~defined within said permeable heat transfer matrix~~ located within said second heat transfer region so as to fluidly connect ones of said plurality of first inlet manifolds to ones of said plurality of second outlet manifolds, said plurality of interconnecting channels ~~operatively~~ configured so that substantially all of the heat transferred between the body and the fluid occurs as the fluid flows ~~toward~~, and substantially perpendicular to, said heat-transfer layer interface.

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